

## **Mathematics Common Core State Standards and Indiana Academic Standards Analysis**

This document can be used to assist educators in analyzing the commonalities and differences between the Common Core State Standards (CCSS) and the Indiana Academic Standards (IAS). In particular, for schools teaching the CCSS, this document can be used to help identify IAS that do not align or only partially align with the CCSS. Students must be given the opportunity to learn the IAS as they will be assessed on these standards through the 2013-14 school year.

The first column states the CCSS. The second column states the IAS that partially align to the CCSS. The third column provides notes, usually highlighting differences between the standards. Please note that in most cases there are not complete matches between the two sets of standards, and it should not be assumed that either the content or skills found in one set of standards will match completely with those of the other set.

At the end of this document, we have listed the IAS Grade 6 indicators that are not aligned to the Grade 6 CCSS. These are presented in two ways: (1) IAS Grade 6 indicators that align to CCSS at a different grade level, with the best match indicated in the first column; and (2) IAS Grade 6 indicators that do not match any CCSS.

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>Ratios and Proportional Relationships</b>		
<b>Understand ratio concepts and use ratio reasoning to solve problems.</b>		
<b>6.RP.1</b> Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak.” “For every vote candidate A received, candidate C received nearly three votes.”</i>	<b>6.2.6</b> Interpret and use ratios to show the relative sizes of two quantities. Use the notations: $a/b$ , $a$ to $b$ , $a:b$ . <i>Example: A car moving at a constant speed travels 130 miles in 2 hours. Write the ratio of distance to time and use it to find how far the car will travel in 5 hours.</i>	This aligns will with IAS 6.2.6.
<b>6.RP.2</b> Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship. <i>For example, “This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar.” “We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger.”</i>	<b>6.2.6</b> Interpret and use ratios to show the relative sizes of two quantities. Use the notations: $a/b$ , $a$ to $b$ , $a:b$ . <i>Example: A car moving at a constant speed travels 130 miles in 2 hours. Write the ratio of distance to time and use it to find how far the car will travel in 5 hours.</i>	This aligns partially with IAS 6.2.6. The CCSS includes unit rates.

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<b>6.RP.3</b> Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	<b>6.1.6</b> Use models to represent ratios. <i>Example: Divide 27 pencils to represent the ratio 4:5.</i>	This aligns partially with IAS 6.1.4 - 6.1.6, 6.2.6 - 6.2.8, and 6.5.2. The CCSS includes unit rates, the use of tables and the coordinate plane with ratios, solving problems involving finding the whole given a part and the percent, using ratio reasoning to do measurement conversions, and manipulating and transforming units.
<b>6.RP.3a</b> Make tables of equivalent ratios relating quantities with whole number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	<b>6.2.7</b> Understand proportions and use them to solve problems. <i>Example: Sam made 8 out of 24 free throws. Use a proportion to show how many free throws Sam would probably make out of 60 attempts. (Partial)</i>	
<b>6.RP.3b</b> Solve unit rate problems including those involving unit pricing and constant speed. <i>For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?</i>	<b>NEW</b>	
<b>6.RP.3c</b> Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole	<b>6.2.8</b> Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips. <i>Example: In a sale, everything is reduced by 20%. Find the sale price of a shirt whose pre-sale price was \$30.</i>	

problems involving finding the whole, given a part and the percent.	<b>6.1.4</b> Convert between any two representations of numbers (fractions, decimals, and percents) without the use of a calculator. <i>Example: Write <math>\frac{5}{8}</math> as a decimal and as a percent.</i>	
<b>6.RP.3d</b> Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	<b>6.5.2</b> Understand and use larger units for measuring length by comparing miles to yards and kilometers to meters. <i>Example: How many meters are in a kilometer?</i>	
<b>The Number System</b>		
<b>Apply and extend previous understandings of multiplication and division to divide fractions by fractions.</b>		
<b>6.NS.1</b> Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. <i>For example, create a story text for <math>(\frac{2}{3}) \div (\frac{3}{4})</math> and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that <math>(\frac{2}{3}) \div (\frac{3}{4}) = \frac{8}{9}</math> because <math>\frac{3}{4}</math> of <math>\frac{8}{9}</math> is <math>\frac{2}{3}</math>. (In general, <math>(\frac{a}{b}) \div (\frac{c}{d}) = \frac{ad}{bc}</math>.) How much chocolate will each person get if 3 people share <math>\frac{1}{2}</math> lb of chocolate equally? How many <math>\frac{3}{4}</math>-cup servings are in <math>\frac{2}{3}</math> of a cup of yogurt? How wide is a rectangular strip of land with length <math>\frac{3}{4}</math> mi and area <math>\frac{1}{2}</math> square mi?</i>	<b>6.2.4</b> Explain how to multiply and divide positive fractions and perform the calculations. <i>Example: Explain why <math>\frac{5}{8} \div \frac{15}{16} = \frac{5}{8} \times \frac{16}{15} = \frac{2}{3}</math>. (Partial)</i>  <b>6.2.5</b> Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation. <i>Example: You want to place a towel bar <math>\frac{9}{16}</math> inches long in the center of a door 27 <math>\frac{1}{2}</math> inches wide. How far from each edge should you place the bar? Explain your method.</i>	This aligns well with IAS 6.2.4 and 6.2.5.

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>Compute fluently with multi-digit numbers and find common factors and multiples.</b>		
<b>6.NS.2</b> Fluently divide multi-digit numbers using the standard algorithm.	<b>NEW</b>	This standard is new to 6th grade. It aligns well with IAS 5.2.1. Sufficient practice and support throughout the year are needed to help students meet this fluency.
<b>6.NS.3</b> Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.	<b>6.2.3</b> Multiply and divide decimals. <i>Example: <math>3.265 \times 0.96 = ?</math>, <math>56.79/2.4 = ?</math>.</i>	This aligns will with IAS 5.2.5 and 6.2.3. Sufficient practice and support throughout the year are needed to help students meet this fluency.
<b>6.NS.4</b> Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. <i>For example, express <math>36 + 8</math> as <math>4(9 + 2)</math>.</i>	<b>6.1.7</b> Find the least common multiple and the greatest common factor of whole numbers. Use them to solve problems with fractions (e.g., to find a common denominator to add two fractions or to find the reduced form for a fraction). <i>Example: Find the smallest number that both 12 and 18 divide into. How does this help you add the fractions <math>5/12</math> and <math>7/18</math>? (Partial)</i>	CCSS 6.NS.4 requires students to use the distributive property to express numbers with a common factor as a multiple of a sum of two numbers with no common factor.

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>Apply and extend previous understandings of numbers to the system of rational numbers.</b>		
<b>6.NS.5</b> Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	<b>6.1.1</b> Understand and apply the basic concept of negative numbers (e.g., on a number line, in counting, in temperature, in “owing”). <i>Example: The temperature this morning was <math>-6^{\circ}</math> and now it is <math>3^{\circ}</math>. How much has the temperature risen? Explain your answer.</i> (Partial)	CCSS 6.NS.5 calls attention to the meaning of 0 in each real world context used to illustrate the concept of positive and negative quantities.
<b>6.NS.6</b> Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.	<b>6.3.7</b> Identify and graph ordered pairs in the four quadrants of the coordinate plane. <i>Example: Plot the points <math>(3, -1)</math>, <math>(-6, 2)</math> and <math>(9, -3)</math>. What do you notice?</i>	
<b>6.NS.6a</b> Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., $-(-3) = 3$ , and that 0 is its own opposite.	<b>6.1.2</b> Interpret the absolute value of a number as the distance from zero on a number line and find the absolute value of real numbers. <i>Example: Use a number line to explain the absolute values of <math>-3</math> and of <math>7</math>.</i>	CCSS 6.NS.6a makes specific mention of 0 being its own opposite.

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<b>6.NS.6b</b> Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.	<b>6.3.7</b> Identify and graph ordered pairs in the four quadrants of the coordinate plane. <i>Example: Plot the points (3, -1), (-6, 2) and (9, -3). What do you notice?</i>	CCSS 6.NS.6b discusses that ordered pairs that differ only by signs are reflected across one or both axes.
<b>6.NS.6c</b> Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	<b>6.3.7</b> Identify and graph ordered pairs in the four quadrants of the coordinate plane. <i>Example: Plot the points (3, -1), (-6, 2) and (9, -3). What do you notice?</i>	
<b>6.NS.7</b> Understand ordering and absolute value of rational numbers.		
<b>6.NS.7a</b> Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. <i>For example, interpret <math>-3 &gt; -7</math> as a statement that <math>-3</math> is located to the right of <math>-7</math> on a number line oriented from left to right.</i>	<b>6.1.3</b> Compare and represent on a number line positive and negative integers, fractions, decimals (to hundredths), and mixed numbers. <i>Example: Find the positions on a number line of 3.56, -2.5, <math>15/6</math>, and -4. (Partial)</i>	CCSS 6.NS.7a requires students to relate statements of inequality to the positions of integers on a number line.

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<b>6.NS.7b</b> Write, interpret, and explain statements of order for rational numbers in real-world contexts. <i>For example, write <math>-3^{\circ}\text{C} &gt; -7^{\circ}\text{C}</math> to express the fact that <math>-3^{\circ}\text{C}</math> is warmer than <math>-7^{\circ}\text{C}</math>.</i>	<b>6.1.3</b> Compare and represent on a number line positive and negative integers, fractions, decimals (to hundredths), and mixed numbers. <i>Example: Find the positions on a number line of 3.56, -2.5, <math>15/6</math>, and -4.</i> (Partial)	CCSS 6.NS.7b requires students to write, interpret, and explain statements of order in real-world contexts
<b>6.NS.7c</b> Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. <i>For example, for an account balance of <math>-30</math> dollars, write <math> -30  = 30</math> to describe the size of the debt in dollars.</i>	<b>6.1.2</b> Interpret the absolute value of a number as the distance from zero on a number line and find the absolute value of real numbers. <i>Example: Use a number line to explain the absolute values of -3 and of 7.</i>	CCSS 6.NS.7c requires the interpretation of absolute value in real-world situations.
<b>6.NS.7d</b> Distinguish comparisons of absolute value from statements about order. <i>For example, recognize that an account balance less than <math>-30</math> dollars represents a debt greater than 30 dollars.</i>	<b>NEW</b>	

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>6.NS.8</b> Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	<b>6.3.7</b> Identify and graph ordered pairs in the four quadrants of the coordinate plane.	This aligns partially with IAS 6.3.7 and 6.3.8. The CCSS includes includes finding the distance between points.
	<b>6.3.8</b> Solve problems involving linear functions with integer* values. Write the equation and graph the resulting ordered pairs of integers on a grid.	

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
Expressions and Equations		
Apply and extend previous understandings of arithmetic to algebraic expressions.		
6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.	6.3.3 Interpret and evaluate expressions that use grouping symbols such as parentheses. <i>Example: Find the values of <math>10 - (7 - 3)</math> and of <math>2(10 - 7)(3 + 1)</math>.</i>	This aligns partially with IAS 6.3.3, 6.3.4, and 6.3.6. The CCSS includes expressions with exponents.
	6.3.4 Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations. <i>Example: Write in symbols: add 19 and 34 and double the result.</i>	
	6.3.6 Apply the correct order of operations and the properties of real numbers (e.g., identity, inverse, commutative, associative, and distributive properties) to evaluate numerical expressions. Justify each step in the process.	

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<b>6.EE.2</b> Write, read, and evaluate expressions in which letters stand for numbers.	<b>6.3.3</b> Interpret and evaluate expressions that use grouping symbols such as parentheses. <i>Example: Find the values of <math>10 - (7 - 3)</math> and of <math>2(10 - 7)(3 + 1)</math>.</i>	The skills required by IAS 6.3.3, and 6.3.4 are not specifically mentioned in CCSS 6.EE.3abc; however students must master these skills in order to master the requirements of CCSS 6.EE.3abc.
	<b>6.3.4</b> Use parentheses to indicate which operation to perform first when writing expressions containing more than two terms and different operations. <i>Example: Write in symbols: add 19 and 34 and double the result.</i>	
<b>6.EE.2a</b> Write expressions that record operations with numbers and with letters standing for numbers. <i>For example, express the calculation "Subtract y from 5" as <math>5 - y</math>.</i>		
<b>6.EE.2b</b> Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. <i>For example, describe the expression <math>2(8 + 7)</math> as a product of two factors; view <math>(8 + 7)</math> as both a single entity and a sum of two terms.</i>		

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<b>6.EE.2c</b> Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). <i>For example, use the formulas <math>V = s^3</math> and <math>A = 6s^2</math> to find the volume and surface area of a cube with sides of length <math>s = \frac{1}{2}</math>.</i>	<b>6.3.2</b> Write and use formulas with up to three variables to solve problems. <i>Example: You have <math>P</math> dollars in a bank that gives <math>r\%</math> simple interest per year. Write a formula for the amount of interest you will receive in one year. Use the formula to find the amount of interest on \$80 at 6% per year for one year.</i>	This aligns partially with IAS 6.3.2 and 6.3.6. The CCSS includes whole number exponents.
	<b>6.3.6</b> Apply the correct order of operations and the properties of real numbers (e.g., identity, inverse, commutative, associative, and distributive properties) to evaluate numerical expressions. Justify each step in the process.	

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<p><b>6.EE.3</b> Apply the properties of operations to generate equivalent expressions. <i>For example, apply the distributive property to the expression <math>3(2 + x)</math> to produce the equivalent expression <math>6 + 3x</math>; apply the distributive property to the expression <math>24x + 18y</math> to produce the equivalent expression <math>6(4x + 3y)</math>; apply properties of operations to <math>y + y + y</math> to produce the equivalent expression <math>3y</math>.</i></p>	<p><b>6.3.6</b> Apply the correct order of operations and the properties of real numbers (e.g., identity, inverse, commutative*, associative*, and distributive* properties) to evaluate numerical expressions. Justify each step in the process. <i>Example: Simplify <math>3(4 - 1) + 2</math>. Explain your method.</i></p>	<p>This aligns partially with IAS 6.3.6. The CCSS includes algebraic expressions.</p>
<p><b>6.EE.4</b> Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). <i>For example, the expressions <math>y + y + y</math> and <math>3y</math> are equivalent because they name the same number regardless of which number <math>y</math> stands for.</i></p>	<p><b>NEW</b></p>	<p>This is new and it connects will with 6.EE.3.</p>

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>Reason about and solve one-variable equations and inequalities.</b>		
<b>6.EE.5</b> Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.	<b>6.3.1</b> Write and solve one-step linear equations and inequalities in one variable and check the answers. <i>Example: The area of a rectangle is 143 cm<sup>2</sup> and the length is 11 cm. Write an equation to find the width of the rectangle and use it to solve the problem. Describe how you will check to be sure that your answer is correct.</i>	CCSS 6.EE.5 requires students to interpret linear equations and inequalities as a process to answer a question.
<b>6.EE.6</b> Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.	<b>6.3.1</b> Write and solve one-step linear equations and inequalities in one variable and check the answers. <i>Example: The area of a rectangle is 143 cm<sup>2</sup> and the length is 11 cm. Write an equation to find the width of the rectangle and use it to solve the problem. Describe how you will check to be sure that your answer is correct.</i>	This aligns well with IAS 6.3.1, 6.3.5, 5.3.1, and 5.3.2.
	<b>6.3.5</b> Use variables in expressions describing geometric quantities. <i>Example: Let <math>l</math>, <math>w</math>, and <math>P</math> be the length, width, and perimeter of a rectangle. Write a formula for the perimeter in terms of the length and width.</i>	

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<p><b>6.EE.7</b> Solve real-world and mathematical problems by writing and solving equations of the form <math>x + p = q</math> and <math>px = q</math> for cases in which <math>p</math>, <math>q</math> and <math>x</math> are all nonnegative rational numbers.</p>	<p><b>6.3.2</b> Write and use formulas with up to three variables to solve problems.  <i>Example: You have <math>P</math> dollars in a bank that gives <math>r\%</math> simple interest per year. Write a formula for the amount of interest you will receive in one year. Use the formula to find the amount of interest on \$80 at 6% per year for one year.</i></p>	<p>CCSS 6.EE.7 specifically requires students to write and solve equations of the forms <math>x + p = q</math> and <math>px = q</math>.</p>
<p><b>6.EE.8</b> Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p>	<p><b>NEW</b></p>	

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<b>Represent and analyze quantitative relationships between dependent and independent variables.</b>		
<p><b>6.EE.9</b> Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. <i>For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation <math>d = 65t</math> to represent the relationship between distance and time.</i></p>	<p><b>6.3.8</b> Solve problems involving linear functions with integer values. Write the equation and graph the resulting ordered pairs of integers on a grid. <i>Example: A plant is 3 cm high the first time you measure it (on Day 0). Each day after that the plant grows by 2 cm. Write an equation connecting the height and the number of the day and draw its graph.</i></p> <p><b>6.3.9</b> Investigate how a change in one variable relates to a change in a second variable. <i>Example: In the last example, what do you notice about the shape of the graph?</i></p>	CCSS 6.EE.9 requires students to conceptualize the terms "dependent and independent variables."

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<b>Geometry</b>		
<b>Solve real-world and mathematical problems involving area, surface area, and volume.</b>		
<b>6.G.1</b> Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.	<b>NEW</b>	
<b>6.G.2</b> Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = bh$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.	<b>6.5.8</b> Use strategies to find the surface area and volume of right prisms and cylinders using appropriate units. <i>Example: Find the volume of a cylindrical can 15 cm high and with a diameter of 8 cm.</i>	CCSS 6.G.2 is limited to finding the volume of right rectangular prisms with fractional side lengths.
	<b>6.3.5</b> Use variables in expressions describing geometric quantities. <i>Example: Let <math>l</math>, <math>w</math>, and <math>P</math> be the length, width, and perimeter of a rectangle. Write a formula for the perimeter in terms of the length and width.</i>	

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<b>6.G.3</b> Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.	<b>NEW</b>	
<b>6.G.4</b> Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.	<b>6.5.7</b> Construct a cube and rectangular box from two-dimensional patterns and use these patterns to compute the surface area of these objects. <i>Example: Find the total surface area of a shoe box with length 30 cm, width 15 cm, and height 10 cm.</i>	CCSS 6.G.4 moves beyond cubes and rectangular boxes to require students to represent and find the surface area of three dimensional figures using nets that include triangles.
<b>Statistics and Probability</b>		
<b>Develop understanding of statistical variability</b>		
<b>6.SP.1</b> Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. <i>For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages.</i>	<b>NEW</b>	

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<p><b>6.SP.2</b> Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.</p>	<p><b>6.6.3</b> Compare the mean, median, and mode for a set of data and explain which measure is most appropriate in a given context.  <i>Example: Twenty students were given a science test and the mean, median and mode were as follows: mean = 8.5, median = 9, mode = 10. What does the difference between the mean and the mode suggest about the twenty quiz scores? (Partial)</i></p>	<p>CCSS 6.SP.2 requires students describe the distribution of a data set by its center, spread, and overall shape. IAS 6.6.3 is limited to mean, median, and mode.</p>
<p><b>6.SP.3</b> Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</p>	<p><b>6.6.3</b> Compare the mean, median, and mode for a set of data and explain which measure is most appropriate in a given context.  <i>Example: Twenty students were given a science test and the mean, median and mode were as follows: mean = 8.5, median = 9, mode = 10. What does the difference between the mean and the mode suggest about the twenty quiz scores? (Partial)</i></p>	<p>CCSS 6.SP.3 requires students to distinguish between the measure of center of a data set and the measure of variation of its values.</p>

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Summarize and describe distributions.		
<b>6.SP.4</b> Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	<b>6.6.2</b> Make frequency tables for numerical data, grouping the data in different ways to investigate how different groupings describe the data. Understand and find relative and cumulative frequency for a data set. Use histograms of the data and of the relative frequency distribution, and a broken line graph for cumulative frequency, to interpret the data. <i>Example: A bag contains pens in three colors. Nine students each draw a pen from the bag without looking, then record the results in the frequency table shown. Complete the column showing relative frequency.</i> (Partial)	CCSS 6.SP.4 includes dot plots and box plots.

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>6.SP.5</b> Summarize numerical data sets in relation to their context, such as by:		
<b>6.SP.5a</b> Reporting the number of observations.	<b>6.6.2</b> Make frequency tables for numerical data, grouping the data in different ways to investigate how different groupings describe the data. Understand and find relative and cumulative frequency for a data set. Use histograms of the data and of the relative frequency distribution, and a broken line graph for cumulative frequency, to interpret the data. <i>Example: A bag contains pens in three colors. Nine students each draw a pen from the bag without looking, then record the results in the frequency table shown. Complete the</i>	
<b>6.SP.5b</b> Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.	<b>NEW</b>	
<b>6.SP.5c</b> Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered.	<b>6.6.3</b> Compare the mean, median, and mode for a set of data and explain which measure is most appropriate in a given context. <i>Example: Twenty students were given a science test and the mean, median and mode were as follows: mean = 8.5, median = 9, mode = 10. What does the difference between the mean and the mode suggest about the twenty quiz scores?</i>	CCSS 6.SP.5c requires students to give quantitative measures of variability and to describe patterns in the data distribution and deviations from the pattern.

Grade 6 Common Core State Standards (CCSS)	Grade 6 Indiana Academic Standards (IAS)	Comment
<b>6.SP.5d</b> Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.	<b>6.6.3</b> Compare the mean, median, and mode for a set of data and explain which measure is most appropriate in a given context. <i>Example: Twenty students were given a science test and the mean, median and mode were as follows: mean = 8.5, median = 9, mode = 10. What does the difference between the mean and the mode suggest about the twenty quiz scores?</i>	
<b>IAS Grade 6 Standards Not Matched by CCSS</b>		
No match in CCSS Grade 6.	<b>6.1.5</b> Recognize decimal equivalents for commonly used fractions without the use of a calculator. <i>Example: Know that <math>\frac{1}{3} = 0.333\dots</math>, <math>\frac{1}{2} = 0.5</math>, <math>\frac{1}{4} = 0.4</math>, etc.</i>	CCSS Grade 4 (4.NF.6) requires students to use decimal notation for fractions with denominators 10 or 100.
No match in CCSS Grade 6.	<b>6.2.1</b> Add and subtract positive and negative integers. <i>Example: <math>17 + -4 = ?</math>, <math>-8 - 5 = ?</math>.</i>	CCSS Grade 7 (7.NS.1)
No match in CCSS Grade 6.	<b>6.2.2</b> Multiply and divide positive and negative integers. <i>Example: Continue the pattern: <math>3 \times 2 = ?</math>, <math>2 \times 2 = ?</math>, <math>1 \times 2 = ?</math>, <math>0 \times 2 = ?</math>, <math>-1 \times 2 = ?</math>, <math>-2 \times 2 = ?</math>, etc.</i>	CCSS Grade 7 (7.NS.2a)

CCSS Mathematical Practices	<b>6.2.9</b> Use estimation to decide whether answers are reasonable in decimal problems. <i>Example: Your friend says that <math>56.79 \div 2.4 = 2.36625</math>. Without solving, explain why you think the answer is wrong.</i>	Assessed in the classroom, not assessed on ISTEP+.
CCSS Mathematical Practices	<b>6.2.10</b> Use mental arithmetic to add or subtract simple fractions and decimals. <i>Example: Subtract from without using pencil and paper.</i>	Assessed in the classroom, not assessed on ISTEP+.
No match in CCSS Grade 6.	<b>6.4.1</b> Identify and draw vertical, adjacent, complementary, and supplementary angles and describe these angle relationships. <i>Example: Draw two parallel lines with another line across them. Identify all pairs of supplementary angles.</i>	CCSS Grade 7 (7.G.5)
No match in CCSS Grade 6.	<b>6.4.2</b> Use the properties of complementary, supplementary, and vertical angles to solve problems involving an unknown angle. Justify solutions. <i>Example: Find the size of the supplement to an angle that measures <math>122^\circ</math>. Explain how you obtain your answer.</i>	CCSS Grade 7 (7.G.5)
No match in CCSS Grade 6.	<b>6.4.3</b> Draw quadrilaterals and triangles from given information about them. <i>Example: Draw a quadrilateral with equal sides but no right angles.</i>	CCSS Grade 7 (7.G.2)

No match in CCSS Grade 6.	<b>6.4.4</b> Understand that the sum of the interior angles of any triangle is $180^\circ$ and that the sum of the interior angles of any quadrilateral is $360^\circ$ . Use this information to solve problems. <i>Example: Find the size of the third angle of a triangle with angles of <math>73^\circ</math> and <math>49^\circ</math>.</i>	CCSS Grade 8 (8.G.5)
No match in CCSS Grade 6.	<b>6.4.5</b> Identify and draw two-dimensional shapes that are similar. <i>Example: Draw a rectangle similar to a given rectangle, but twice the size.</i>	CCSS Grade 8 (8.G.5)
No match in CCSS Grade 6.	<b>6.4.6</b> Draw the translation (slide) and reflection (flip) of shapes. <i>Example: Draw a square and then slide it 3 inches horizontally across your page. Draw the new square in a different color.</i>	CCSS Grade 8 (8.G.2)
No match in CCSS Grade 6.	<b>6.4.7</b> Visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids. <i>Example: Draw a picture of an arrangement of rectangular blocks from the top, front, and right-hand side.</i>	CCSS Grade 7 (7.G.2)

No match in CCSS.	<b>6.5.1</b> Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles. <i>Example: A triangular sheet of metal is about 1 foot across. Describe the units and tools you would use to measure its weight, its angles, and the lengths of its sides.</i>	
No match in CCSS Grade 6.	<b>6.5.3</b> Understand and use larger units for measuring area by comparing acres and square miles to square yards and square kilometers to square meters. <i>Example: How many square meters are in a square kilometer?</i>	Assessed in the classroom, not assessed on ISTEP+.
No match in CCSS Grade 6.	<b>6.5.4</b> Understand the concept of the constant $\pi$ as the ratio of the circumference to the diameter of a circle. Develop and use the formulas for the circumference and area of a circle. <i>Example: Measure the diameter and circumference of several circular objects. (Use string to find the circumference.) With a calculator, divide each circumference by its diameter. What do you notice about the results?</i>	CCSS Grade 7 (7.G.4)

No match in CCSS Grade 6.	<b>6.5.5</b> Know common estimates of $\pi$ (3.14, 22/7) and use these values to estimate and calculate the circumference and the area of circles. Compare with actual measurements. <i>Example: Find the area of a circle of radius 15 cm.</i>	CCSS Grade 7 (7.G.4)
No match in CCSS Grade 6.	<b>6.5.6</b> Understand the concept of significant figures and round answers to an appropriate number of significant figures. <i>Example: You measure the diameter of a circle as 2.47 m and use the approximation 3.14 for <math>\pi</math> to calculate the circumference. Is it reasonable to give 7.7558 m as your answer? Why or why not?</i>	Assessed in the classroom, not assessed on ISTEP+. CCSS Grade 7 (7.G.4)
No match in CCSS.	<b>6.5.9</b> Use a formula to convert temperatures between Celsius and Fahrenheit. <i>Example: What is the Celsius equivalent of 100°F? Explain your method.</i>	
No match in CCSS.	<b>6.5.10</b> Add, subtract, multiply, and divide with money in decimal notation. <i>Example: Share \$7.25 among five people.</i>	

No match in CCSS Grade 6.	<b>6.6.1</b> Organize and display single-variable data in appropriate graphs and stem-and-leaf plots, and explain which types of graphs are appropriate for various data sets. <i>Example: This stem-and-leaf diagram shows a set of test scores for your class: Find your score of 85 in this diagram. Are you closer to the top or the bottom of the class on this test?</i>	Stem-and-leaf plots are not mentioned in the CCSS.
No match in CCSS Grade 6.	<b>6.6.4</b> Show all possible outcomes for compound events in an organized way and find the theoretical probability of each outcome. <i>Example: A box contains four cards with the numbers 1 through 4 written on them. Show a list of all the possible outcomes if you draw two cards from the box without looking. What is the theoretical probability that you will draw the numbers one and two? Explain your answer.</i>	CCSS Grade 7 (7.SP.8)
No match in CCSS Grade 6.	<b>6.6.5</b> Use data to estimate the probability of future events. <i>Example: Teams A and B have played each other 3 times this season and Team A has won twice. When they play again, what is the probability of Team B winning? How accurate do you think this estimate is?</i>	CCSS Grade 7 (7.SP.6,7)

<p>No match in CCSS Grade 6.</p>	<p><b>6.6.6</b> Understand and represent probabilities as ratios, measures of relative frequency, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable. <i>Example: The weather forecast says that the chance of rain today is 30%. Should you carry an umbrella? Explain your answer.</i></p>	<p>CCSS Grade 7 (7.SP.5)</p>
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